What is Claimed is:

1. A multicarrier communication line characterization system comprising:

a data postprocessing module; and

a data interpretation module, wherein raw data received from one or more modems via a data collection module is used to determine the characteristics of a communications link.

2. The system of claim 1, wherein the data processing module performs at least one of a calibration, a filter compensation, a determination of the SNR Medley from a bits and gains table and a data rate conversion.

3. The system of claim 1, wherein the data interpretation module performs at least one a loop characterization, a interferer detection, a data reduction estimation and a data rate estimation.

4. The system of claim 1, wherein the communications link is a portion of at least one of a digital subscriber line communications system, a discrete multi-tone communications system or discrete wavelet multi-tone communications system, and the multicarrier communications line characterization system outputs visually displayable data about the communications link based on data obtained from one or more of a CO or CPE modem.

5. A multicarrier communications line characterization system comprising:

a calibrated data determination module, wherein a calibrated data is determined based on a data array, a number of elements in the data array, a programmable gain amplifier setting and a scaling factor.

6. The system of claim 5, wherein the calibrated data is determined in accordance with:

$$CalibratedData[i] = 10*Log_{10}(RawData[i] * 2^{GScale}) - PGA$$

wherein CalibratedData[i] is a calibrated data array, RawData[i] is data received from a modem, GScale is a gain scaling and PGA is a programmable gain amplifier setting that was used to collect the data array.

7. A multicarrier communications line characterization system comprising:

a filter compensated data array determination module that determines a filter compensated data array based on a calibrated data array, a frequency domain filter function, and a number of elements in the calibrated data array.

8. The system of claim 7, wherein the frequency domain filter function is based on a device specific frequency domain response of one or more analog front end filters.

9. A multicarrier communications line characterization system comprising:

a filter compensated data array determination module that reduces the effects of one or more of a time domain and a frequency domain equalization filter.

10. The system of claim 9, wherein the filter compensated data array is based on a calibrated data array, one or more time domain equalizer coefficients, one or more frequency domain filter coefficients, and a number of elements in the calibrated data array.

11. A multicarrier communications line characterization system comprising:

a far-end signal to noise ratio table estimator that estimates a far-end signal to noise ratio table based on a far-end bit loading table, a far-end fine gains table, a number of bits in the far-end bit loading table and the far-end fine gains table, a required signal to noise ratio and a margin.

12. The system of claim 11, wherein the margin is based on the amount the signal to noise ratio will be reduced in determining the far-end bit loading table.

13. A multicarrier communications line characterization system comprising:

a loop length and bridged tap estimation module that determines an estimate of the loop lengths and presence of one or more bridged taps based on an echo waveform, a time domain reflectivity waveform and a comparison to a model of a communications channel response.

14. The system of claim 13, wherein the estimate is determined based on a loop length and bridged tap length that minimizes an error function.

15. A multicarrier communications line characterization system comprising:

a distrubance estimation module that determines a disturbance on a communications link based on an idle channel noise quantity and a minimization of mean square error.

16. The system of claim 15, wherein the minimization is based on varying the power of a disturber and a power of a white noise.

17. A multicarrier communications line characterization system comprising:

an AM disturber estimation module that determines the presence of one or more AM disturbers based on an array containing channel noise, a second difference of the array and a comparison of one or more carrier frequencies to a threshold.

18. The system of claim 17, wherein the estimation module outputs an array containing one or more tone numbers corresponding to a detected AM disturber.

19. The system of claim 17, wherein the estimation module outputs an array containing a power level of a detected AM disturber.

20. The system of claim 17, wherein the estimation module outputs a number representing the number of detected AM disturbers.

21. A multicarrier communications line characterization system comprising:

an EMI disturber estimation module that determines the presence of one or more EMI disturbers based on an array containing channel noise, a second difference of the array and a comparison of one or more carrier frequencies to a threshold.

22. The system of claim 17, wherein the estimation module outputs an array containing one or more tone numbers corresponding to a detected EMI disturber.

23. The system of claim 17, wherein the estimation module outputs an array containing a power level of a detected EMI disturber.

24. The system of claim 17, wherein the estimation module outputs a number representing the number of detected EMI disturbers.

25. A multicarrier communications line characterization system comprising:

a rate degradation estimating module that estimates a rate degradation based on an estimated maximum data rate and a SNR reduction caused by one or more disturbers.

26. The system of claim 25, wherein the rate estimate is also based on an array containing idle channel noise, an array containing idle channel noise with no crosstalk nor AM/EMI disturbers, a SNR Medley, a margin, a framing mode, a coding gain, a number of the elements in a SNR table and a data rate.

27. A multicarrier communications line characterization system comprising:

a data rate estimation module that estimates a data rate for a communications channel based on a channel attenuation, a noise on an idle channel, a margin, information about a framing mode, a coding gain and a SNR table.

28. The system of claim 27, where the estimation is based on performing a bit loading on a SNR.

29. A method of characterizing a multicarrier communications link comprising:

postprocessing data received from one or more of a CO and a CPE modem; and

interpreting the data to determine the characteristics of the communications link.

30. The method of claim 29, wherein the postprocessing comprises at least one of a calibration, a filter compensation, a determination of the SNR Medley from a bits and gains table and a data rate conversion.

31. The method of claim 29, wherein the data interpretation comprises at least one of a loop characterization, a interferer detection, a data reduction estimation and a data rate estimation.

32. The method of claim 29, wherein the communications link is a portion of at least one of a digital subscriber line communications system, a discrete multi-tone communications system or discrete wavelet multi-tone communications system, and wherein visually displayable data about the communications link based on data obtained from one or more of the CO or the CPE modem is output.

33. A method of characterizing a multicarrier communications link comprising:

calibrating data based on a data array, a number of elements in the data array, a programmable gain amplifier setting and a scaling factor.

34. The method of claim 33, wherein the calibrated data is determined in accordance with:

$$\text{CalibratedData}[i] = 10*\text{Log}_{10}(\text{RawData}[i] * 2^{\text{GScale}}) - \text{PGA}$$

wherein CalibratedData[i] is a calibrated data array, RawData[i] is data received from a modem, GScale is a gain scaling and PGA is a programmable gain amplifier setting that was used to collect the data array.

35. A method of characterizing a multicarrier communications link comprising:

determining a filter compensated data array based on a calibrated data array, a frequency domain filter function, and a number of elements in the calibrated data array.

36. The method of claim 35, wherein the frequency domain filter function is based on a device specific frequency domain response of one or more analog front end filters.

37. A method of characterizing a multicarrier communications link comprising:

determining a filter compensated data array based on reducing the effects of one or more of a time domain and a frequency domain equalization filter.

38. The method of claim 37, wherein the filter compensated data array is based on a calibrated data array, one or more time domain equalizer coefficients, one or more frequency domain filter coefficients, and a number of elements in the calibrated data array.

39. A method of characterizing a multicarrier communications link comprising:

estimating a far-end signal to noise ratio table based on a far-end bit loading table, a far-end fine gains table, a number of bits in the far-end bit loading table and the far-end fine gains table, a required signal to noise ratio and a margin.

40. The method of claim 39, wherein the margin is based on the amount the signal to noise ratio will be reduced in determining the far-end bit loading table.

41. A method of characterizing a multicarrier communications link comprising:

estimating a loop length and bridged tap based on an echo waveform, a time domain reflectivity waveform and a comparison to a model of a communications channel response.

42. The method of claim 41, wherein the estimate is determined based on a loop length and bridged tap length that minimizes an error function.

43. A method of characterizing a multicarrier communications link comprising:

estimating a disturbance on a communications link based on an idle channel noise quantity and a minimization of a mean square error.

44. The method of claim 43, wherein the minimization is based on varying the power of a disturber and a power of a white noise.

45. A method of characterizing a multicarrier communications link comprising:

estimating the presence of one or more AM disturbers based on an array containing channel noise, a second difference of the array and a comparison of one or more carrier frequencies to a threshold.

46. The method of claim 45, further comprising outputting an array containing one or more tone numbers corresponding to a detected AM disturber.

47. The method of claim 45, further comprising outputting an array containing a power level of a detected AM disturber.

48. The method of claim 45, further comprising outputting a number representing the number of detected AM disturbers.

49. A method of characterizing a multicarrier communications link comprising:

estimating a presence of one or more EMI disturbers based on an array containing channel noise, a second difference of the array and a comparison of one or more carrier frequencies to a threshold.

50. The method of claim 49, further comprising outputting an array containing one or more tone numbers corresponding to a detected EMI disturber.

51. The method of claim 49, further comprising outputting an array containing a power level of a detected EMI disturber.

52. The method of claim 49, further comprising outputting a number representing the number of detected EMI disturbers.

53. A method of characterizing a multicarrier communications link comprising:

estimating a rate degradation based on an estimated maximum data rate and a SNR reduction caused by one or more disturbers.

54. The method of claim 53, wherein the rate estimate is also based on an array containing idle channel noise, an array containing idle channel noise with no crosstalk nor AM/EMI disturbers, a SNR Medley, a margin, a framing mode, a coding gain, a number of the elements in a SNR table and a data rate.

55. A method of characterizing a multicarrier communications link comprising:

estimating a data rate for a communications channel based on a channel attenuation, a noise on an idle channel, a margin, information about a framing mode, a coding gain and a SNR table.

56. The method of claim 55, where the estimation is based on performing a bit loading on a SNR.

57. An information storage media comprising information for characterizing a multicarrier communications link comprising:

information that postprocesses data received from one or more of a CO and a CPE modem; and

information that interprets the data to determine the characteristics of the communications link.